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## NOTES ON THE LOCUSTIDÆ OF ONTARIO.

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(Continued from p. 38.)

### Sub-family *DECTICINÆ*.

22. ATLANTICUS PACHYMERUS, Burm.—The Shield-back Grasshopper.

*Decticus pachymerus*, Burm., Handb. der Ent., II., 1838, 712.

*Thyreonotus pachymerus*, Scudd., Bost. Journ. Nat. Hist., VII., 1862, 453.

*Atlanticus pachymerus*, Scudd., CAN. ENT., XXVI., 1894, 179.

Measurements: Length of body, ♂ 17–23 mm., ♀ 20–22 mm.; of pronotum, ♂ 8.8–9.3 mm., ♀ 8.5–9 mm.; of hind femora, ♂ 16 mm., ♀ 16.5 mm.; of tegmina, ♂ 7.3–8 mm.; of ovipositor, 18.3–19 mm.

This large brown insect, the "Shield-back Grasshopper," is readily known from all others in our fauna by the large size of the pronotum, which extends back over the first abdominal segment, the rudimentary tegmina in the male and the absence of these organs in the female.

The only Ontario specimens I have seen are three males and two females, which I captured at Arner, Essex Co., on Aug. 9, 1901. They were found in the more open parts of a dry upland wood, consisting chiefly of oak and other hardwoods. Most of them were found on the short grass which was growing on the slopes of a ravine in the wood.

### Sub-family *STENOPELMATINÆ*.

The only genus represented in Ontario is *Ceuthophilus*, and it is a very difficult one to deal with, only the matured males of many species being separable in anything like a satisfactory manner.

Through the kindness of Mr. Henshaw I was able to compare my specimens with those in the Scudder collection, and found that our commonest species is undescribed, and that Scudder's types of *terrestris* include two species, one of which is identical with *C. neglectus*, Scudd.

The characters which I find of most value in separating the species of this genus are the form of the sub-genital plate and ninth dorsal segment

of the males. The former, especially, varies greatly in shape, but, strangely enough, has been quite ignored by entomologists.

Key to males of the species of *Ceuthophilus* found in Ontario :

- A. Hind margin of 9th dorsal segment of abdomen distinctly emarginate ; hind tibiæ arcuate in their basal third . . . . . 1. *maculatus*.  
 AA. Hind margin of 9th dorsal segment entire, rounded. Hind tibiæ straight.  
     B. Outer carina of hind femora with less than 20 spines, usually 12 or 13, well separated from one another . . . . . 2. *pallidipes*, n. sp.  
 BB. Outer carina of hind femora with 25-30 small teeth, crowded together over two-thirds or more of its length.  
     C. Hind femora as long as or barely shorter than hind tibiæ, and not more than 3 times as long as broad ; fore femora but little longer than pronotum . . . . . 3. *neglectus*.  
     CC. Hind femora distinctly shorter (about one-tenth) than hind tibiæ,  $3\frac{1}{2}$  times as long as broad ; fore femora at least a third longer than pronotum . . . . . 4. *terrestris*.

23. *CEUTHOPHILUS MACULATUS*, Say.—The Spotted Stone Cricket *Rhaphidophora maculata* (Say, MS.), Harris, Ins. Inj. Veg., 1841, 126.

*Phalangopsis maculata*, Harr., Ins. Inj. Veg., 1862, 155.

*Ceuthophilus maculatus*, Scudd., Bost. Journ. Nat. Hist., VII., 1862, 434.

Measurements: Length of body, ♂ 14 mm., ♀ 16 mm.; of pronotum, ♂ 4.6 mm., ♀ 4.8 mm.; of anterior femora, ♂ 6.6 mm., ♀ 5.8 mm.; of hind femora, ♂ 15.5 mm., ♀ 15 mm.; of hind tibiæ, ♂ 16 mm., ♀ 15.3 mm.; of ovipositor, 9.3 mm.

On July 1st, 1903, while collecting at Niagara Glen, I found a number of *Ceuthophili* under two or three large flat stones in a dry open wood, just above the Glen. They were nearly all immature, but three males appear to be full-grown, or nearly so, and are easily recognizable as *maculatus*. This is the only time I have come across this species in Ontario, although I have found it common in certain parts of Quebec. It is doubtless, however, pretty generally distributed over the Province, wherever suitable conditions for its existence obtain.

The measurements given are taken from mature examples from the Isle d'Orleans, P. Q., as my Ontario ones, if full-grown, are rather undersized.

I found this species in considerable numbers on the Isle d'Orleans, under flat stones at the bottom of a wooded hill. They were associated with *C. terrestris*.

The best character for distinguishing the males of this species from those of the other species of this region is the emarginate hind margin of the 9th dorsal segment and the peculiar shape (Pl. IV., fig. 1) of the subgenital plate. The fore femora are frequently more than a third longer than the pronotum.

24. *CEUTHOPHILUS PALLIDIPES*, sp. nov.

Of medium size and moderately stout. Fore femora no stouter than the middle pair, one third or a little more, longer than the pronotum, and about three-sevenths the length of the hind femora. Fore tarsi faintly or no longer than the pronotum, rather slender. Middle femora with 1-3 spines on the front carina, and with 0-3 on the hind besides the genicular spine. Hind femora about as long as the body, moderately stout, about  $3\frac{1}{2}$  times as long as broad, the upper margin more convex than the lower, which is nearly straight in its proximal half. A very few raised points usually present on the upper part of the inner surface. Inferior sulcus very narrow, except at apex, rather deep, rounded when not altered in shape by drying. The spines on the outer and inner carinæ in the male are very variable, both in number and size, but are never conspicuous. There may be from 10 to 18 on the outer and 8 to 15 on the inner, but are usually 12 or 13 on each. They are nearly equal in size, and more or less irregularly scattered over the apical half or two-thirds of each carinæ. In the female there are about the same number, or fewer, very minute and delicate spines distributed in a similar manner. Hind tibiæ faintly longer than the femora, moderately slender, the spurs longer than the tibial depth, usually set at an angle of  $60^{\circ}$  or  $70^{\circ}$  with the tibiæ, but very variable in this respect. Inner middle calcaria nearly or quite as long as the first tarsal joint. Extremity of male abdomen slightly swollen, the 9th dorsal segment somewhat upturned and produced into a short truncate supra-anal plate, its corners well rounded. Subgenital plate of male large, convex and upturned, divided by a deep median fissure into two spoon-shaped lobes, which slightly overlap in the middle line. Each lobe is about one-half longer than broad, its upper margin nearly straight,

separated from that of the opposite lobe by a V-shaped space, and meeting the straight anterior margin at a right angle. Cerci very nearly as long as the breadth of the hind femora, tapering from a fairly stout base. Ovipositor about three-fifths the length of the hind femora, nearly straight, tapering, especially in the proximal half, the basal third considerably swollen; apex upturned and sharply pointed. Teeth of inner valves five, sharp, nearly equidistant.

General colour pale reddish-brown. Two broad shining black bands above, fading into pale yellowish-brown half way down the sides of the thorax, and separated by a broad mesial band of orange or reddish-brown, which passes along the thorax to the first or second abdominal segments, where it begins to be broken up into small spots. These spots are small and few on the pronotum, but become larger and more numerous posteriorly, forming tolerably regular transverse rows on the abdominal segments, there being a single row for each segment. The dark colour often becomes more grayish and less shiny on the abdominal segments. Eyes deep black; antennæ brownish, annulate with pale yellowish. Face, under side of body, and legs, pale reddish or yellowish brown. Fore and middle femora infuscated apically; hind femora pale reddish-brown, mottled above with darker brown, the usual scalariform markings rather pale, much less distinct than in *C. maculatus* or *terrestris*. Hind tibiæ and tarsi pale yellowish, the spurs deep black at base, pale apically. Cerci reddish-brown, infuscated apically. Ovipositor shining reddish-brown.

Measurements: Length of body, ♂ ♀, 1.4 mm.; of pronotum, ♂ 4.1 mm., ♀ 4.3 mm.; of fore femora, ♂ ♀, 5.8 mm.; of hind femora, ♂ 13.5 mm., ♀ 14 mm.; of hind tibiæ, ♂ ♀, 14.8 mm.; of ovipositor, 9 mm.

Ten males, 10 females. Niagara Glen, Ont., Aug. 18, 1904; Toronto, Aug. 5, 1904; De Grassi Pt., Lake Simcoe, July 13-15, 1901, Sept. 7, 1902, July 18, 19, 1904; Lake Muskoka (small island) Aug. 27, 1899; Ragged Lake, Algonquin Park, Aug. 17, 1903.

This species is most closely related to *C. latens*, Scudd., although differing greatly from that species in the character of the spines on the under side of the hind femora of the male, the latter being also much stouter in *latens*. It closely approaches *latens*, however, in all other respects, including the peculiar structure of the male genitalia. The ovipositor in *latens* is less swollen at base. In colour and markings the two species are nearly identical, but in size *latens* is much the larger.

*C. pallidipes* is the commonest species of the genus in central Ontario, usually occurring under chunks and small logs in woods. On Aug. 8, 1904, I found them in some numbers on the slope of one of the Rosedale ravines at Toronto, but the area over which they occurred was limited to a few acres. There were two or three or more individuals under nearly every chunk of wood, most of them mature. At De Grassi Point, Lake Simcoe, I have occasionally taken them in rotten sodden logs. In one such log seven adults were found together.

As is commonly the case in *Ceuthophilus*, the young nymphs may be found at any time in the year, for although most of them mature in the summer from eggs hatched in the spring, a few pass the winter as young nymphs, the eggs not having hatched until the fall. They usually reach maturity about the first or second week in July, and continue until the second week in September.

25. *CEUTHOPHILUS NEGLECTUS*, Scudd.

*Ceuthophilus maculatus* (pars), Scudd., Bost. Journ. Nat. Hist., VII., 434 (1862).

*Ceuthophilus terrestris* (pars), Scudd., Proc. Amer. Acad. Arts. Sc., XXX, 46 (1894).

*Ceuthophilus neglectus*, Scudd., Proc. Amer. Acad. Arts. Sc., XXX., 67 (1894).

I have but one pair of this species, about half grown, taken from under a stone at Niagara Glen, Aug. 18, 1904. A number of very young individuals were also found with them. They were kindly determined for me by Mr. A. P. Morse, who compared them with material in the Scudder collection. I was afterwards able to confirm his determination.

*C. neglectus* is an eastern species, ranging from Vermont and Northern New York to Virginia.

Figs. 3, 3a, Pl. 5, were drawn from one of Scudder's type specimens. Figs. 3b, 3c are from my immature male, and probably do not exactly represent the form of the subgenital plate in the adult.

26. *CEUTHOPHILUS TERRESTRIS*, Scudd.

*Rhaphidophora lapidicola*, Scudd., Proc. Bost. Soc. Nat. Hist., VIII., 7 (1861).

*Ceuthophilus lapidicolus*, Scudd., Bost. Journ. Nat. Hist., VII., 435 (1862).

*Phalangopsis lapidicola*, Bess., Rep. Iowa Agric. Coll., VII., 206 (1877).

*Ceuthophilus terrestris*, Scudd., Proc. Amer. Acad. Arts. Sc., XXX., 46 (1894).

Measurements: Length of body, ♂ 12.5 mm., ♀ 14 mm.; of pronotum, ♂ 4.5 mm., ♀ 4.25 mm.; of fore femora, ♂ 6.3 mm., ♀ 5.75 mm.; of hind femora, ♂ 14.3 mm., ♀ 12.7 mm.; of hind tibiae, ♂ 15.5 mm., ♀ 14 mm.; of ovipositor, 7.5 mm.

This is the species to which most of Scudder's types belong, but the few mature males in the collection are identical with *neglectus*, and his description of *terrestris* is evidently based partly upon these. His statements regarding the hind femora and tibiae especially apply to *neglectus*. The chief distinctions between the two species in this particular are given in the above key. The legs in *terrestris* are much longer and more slender; and the scalariform markings on the hind femora much more distinct, closely resembling those of *maculatus*, though usually paler, as Scudder himself has defined them.

*C. terrestris* has a more northern range than *neglectus*, being characteristic of the Boreal and Transition zones.

The specimens of undoubted *terrestris* in the Scudder collection are from the following localities: Anticosti; Gorham, Norway, and Moosehead, Lake region, Me.; Mt. Washington and Franconia, N. H.

In Ontario I have taken it at Niagara Glen, Aug. 18, 1904; Toronto, Aug. 8, 1904; Goderich, Aug. 19, 1901; De Grassi Pt., Lake Simcoe, June 29, 1901 (half grown), Sept. 7, 1902; and I have also a female from Morris Id., Lake Joseph, Muskoka, taken by Mr. E. M. Morris, July 12, 1888. I have not found *terrestris* common anywhere in Ontario, but came across it in considerable numbers on the Isle d'Orleans, P. Q., Aug., 1904, under flat stones, at the foot of a wooded hill. It was in company with *C. maculatus*.

Mr. J. A. G. Rehn has recently reported the true *terrestris* from Keweenaw Bay, Lake Michigan.

#### EXPLANATION OF PLATES.

##### Plate IV.

- Fig. 1. *Ceuthophilus maculatus*, ♂, Isle d'Orleans, P. Q. (× 3).  
 1a. *Ceuthophilus maculatus*, ♂, terminal segments of abdomen from above (× 10).  
 1b. *Ceuthophilus maculatus*, ♂, subgenital plate, from below (× 10).  
 1c. " " " subgenital plate, lateral view (× 10).  
 2. " *pallidipes*, " Lake Simcoe, Ont. (× 3).

- Fig. 2a. *Ceuthophilus pallidipes*, ♂, terminal segment of abdomen ( $\times 10$ ).  
 2b. " " " subgenital plate, from below ( $\times 10$ ).  
 2c. " " " subgenital plate, lateral view ( $\times 10$ ).

## Plate V.

- Fig. 3. *Ceuthophilus neglectus*, ♂, Scudder's type ( $\times 3$ ).  
 3a. " " " terminal segments of abdomen ( $\times 10$ ).  
 3b. " " " subgenital plate, from below ( $\times 10$ ).  
 3c. " " " subgenital plate, lateral view ( $\times 10$ ).  
 4. " *terrestris*, " Isle d' Orleans, P. Q. ( $\times 3$ ).  
 4a. " " " terminal segments of abdomen ( $\times 10$ ).  
 4b. " " " subgenital plate, from below. ( $\times 10$ ).  
 4c. " " " subgenital plate, lateral view ( $\times 10$ ).

ASSINIBOIA MICRO-LEPIDOPTERA, COLLECTED BY MR.  
 T. N. WILLING.

BY W. D. KEARFOTT, MONTCLAIR, N. J.

(Continued from page 93.)

*Tortrix conflictana*, Walk.—Five specimens; Lethbridge, Macleod and Piné Cr  ek; VII., 8, to VII., 13. Larger and the bands more suffused than Eastern specimens.

*Tortrix argentana*, Clerck.—Three specimens; Macleod and Lethbridge; VIII., 8 to 15. I have a long series of this species from Western America, south nearly to Mexico, and north to British Columbia, likewise a series from Europe, and every time I examine them I am impressed with the feeling that our American species differs from the European, but further study is required before deciding either way, in the meantime the European name can stand. This *Tortrix* is easily mistaken for *Crambus perlellus*, Scop. See comparative notes under the latter name.

*Eulia triferana*, Walk.—Two specimens; Regina, VI., 8 to 20, rather badly rubbed, but matching exactly Eastern examples in my collection under this name; this species is either the most variable of all Lepidoptera or else a good many more than one have been lumped under the one name. This is the most Western record I know of.

*Phalonia angulatana*, Rob.—One specimen; Regina, VI., 18. New Western record, common in the Eastern States, and recorded from Texas.

## PYRALIDÆ.

*Nomophila noctuella*, Schiff.—One specimen; Regina, IX., 5. Common in all known regions of the world.